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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/766,029

01/29/2004

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7590

12/07/2005

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EXAMINER

GOLUB, MARCIA A

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 12/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/766,029 | Applicant(s) HASHIMOTO ET AL. | |
| | Examiner Marcia A. Golub | Art Unit 2828 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>6/25/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

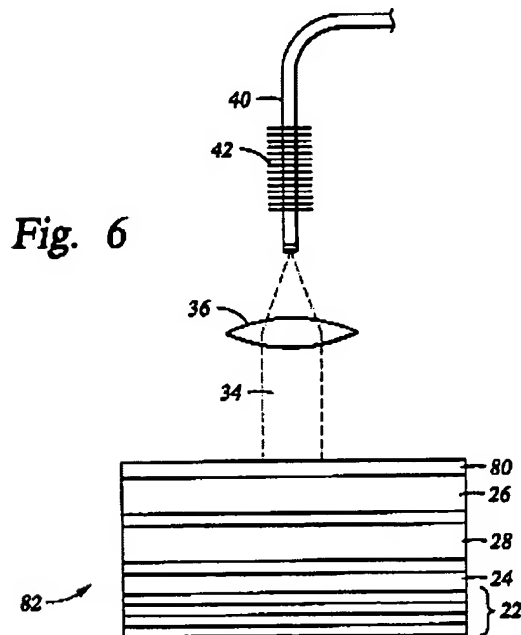
Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3,4,6,7,9,10,11 rejected under 35 U.S.C. 102(e) as being anticipated by Kuksenkov et al. (6,625,182)



Regarding **claim 1**, Fig 6 of Kuksenkov discloses “a laser module, comprising an external cavity including: semiconductor optical amplifier device [82] having first [80] and second [22] end surfaces; grating fiber [40] having an end and a diffraction grating

[42]; and lens [36] for optically coupling the first end surface and the end together, wherein an optical cavity length of the external cavity is in a range of 13 millimeters or more but 27 millimeters or less. [2 cm]" (7/32-41)

Regarding **claim 5**, Kuksenkov discloses a laser module as described above, "further comprising: a mounting component [support structure] which mounts the semiconductor optical amplifier device (9/19-20); a lens holding member [glass tube] which is supported by the mounting component [support structure] and holds the lens (9/11-12, 17-19); a ferrule [ferrule] which holds the grating fiber [40]; and a ferrule holding member [glass tube] which holds the ferrule and is supported by the mounting component [support structure] (9/10-11, 17-19), wherein the grating fiber [40] has first portion provided with the diffraction grating [42], and a second portion of a pigtail shape." Kuksenkov discloses using the laser module to couple light into a fiber amplifier (12/9-11). Coupling separate devices requires that a laser module has a coupling end such as a pigtail.

Regarding **claim 6**, Kuksenkov discloses a laser module as described above, "further comprising: a mounting component [support structure] which mounts the semiconductor optical amplifier device (9/19-20); a lens holding member [glass tube] which is supported by the mounting component [support structure] and holds the lens (9/11-12, 17-19); a ferrule [ferrule] which holds a fiber stub provided with the diffraction grating [Bragg grating](9/10-11, 23-24);" Kuksenkov discloses using the laser module to couple light into a fiber amplifier (12/9-11). Coupling separate devices requires that a laser module has a coupling end such as a stub.

“and a ferrule holding member [glass tube] which holds the ferrule and is supported by the mounting component [support structure] (9/10-11, 17-19).”

Regarding **claim 7**, Fig 6 of Kuksenkov discloses “a laser module, comprising a semiconductor optical amplifier device [82] having first [80] and second [22] end surfaces; a grating fiber [40] having an end and diffraction grating [42]; and component-mounted member [support structure] for configuring an external cavity by optically coupling the semiconductor optical amplifier device and the grating fiber together (9/14-20), wherein the component-mounted member [support structure] includes an abutting surface [ferrule] on which the end of the grating fiber is abutted, the component-mounted member mounts the semiconductor optical amplifier device, and an optical cavity length of the external cavity is in a range of 13 millimeters or more but 27 millimeters or less [2 cm].” (7/32-41)

Regarding **claims 3, 4, 9, 10**, Kuksenkov discloses a laser module as described above, “wherein the diffraction grating of the grating fiber has a reflection spectrum, and full width half maximum of the reflection spectrum is 0.4 nanometers or less [0.2 nm]; “and an interval between adjacent longitudinal modes in the external cavity is within a full width at half maximum of the reflection spectrum [0.05 nm].” (7/29-31)

Regarding **claim 11**, Kuksenkov discloses a laser module as described above, “wherein the component-mounted member [support structure] includes a first region [support structure] and a second region [glass tube] which are provided along a predetermined axis [tube axis], the semiconductor optical amplifier device is mounted in the first region of the component-mounted member, the grating fiber is mounted in the

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second region of the component-mounted member, and the second region of the component-mounted member includes first and second supporting surfaces [ferrule] which support side surfaces of the grating fiber." (9/6-26)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuksenkov et al. as applied to claims 1 and 7 above, and further in view of Bricheno (GB 002110835 A).

Regarding **claims 2 and 8**, Kuksenkov discloses a laser module as described above, but does not disclose that "the end of the grating fiber is a lens-shaped end portion." However, lens-shaped fiber ends are well known in the art and are disclosed by Bricheno (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Bricheno into the device disclosed by Kuksenkov by making a lens-shaped fiber end. The ordinary artisan would have been motivated to modify the device of Kuksenkov in the manner set forth above for at least the purpose of increasing the efficiency of optical coupling by mode matching between the laser and the fiber.

Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (# AM disclosed in IDS)

Regarding **claim 12**, Fig 1 of Tanaka discloses “a laser module, comprising an external cavity including: semiconductor optical amplifier device [SSC-LD] having first and second end surfaces; and a planar optical waveguide [silica waveguide] having an end and diffraction grating [UV written grating]”. Tanaka discloses the cavity length to be 12 mm. (p.1202 *Fabrication*)

Tanaka does not disclose that “an optical cavity length of the external cavity is in range of 13 millimeters or more but 27 millimeters or less.” However, the courts have held that optimization of range is not inventive unless it is accompanied by unexpected results (see MPEP 2144.05)

Regarding **claim 13 and 14** Tanaka discloses the laser module as described above, “wherein the diffraction grating of the grating fiber has a reflection spectrum, and a full width at half maximum of the reflection spectrum is 0.4 nanometer or less [FWHM 0.22 nm]; and an interval between adjacent longitudinal modes in the external cavity is within a full width at half maximum of the reflection spectrum.” [5 cavity modes within FWHM] (p. 1202 *Results and discussion*)

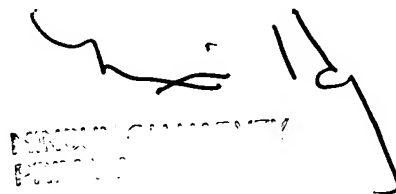
Fax/Telephone Info

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcia A. Golub whose telephone number is 571-272-8602. The examiner can normally be reached on M-F 9-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAG

A handwritten signature in black ink, appearing to be 'MAG', is written over a rectangular stamp. The stamp contains the text 'RECEIVED' and 'FEB 14 2011' in a bold, sans-serif font.